From Conductivity to Consciousness: A Molecular-Gradient Theory of Mind

A bridge between Thermodynamics, Molecular Biology, Philosophy of Mind.

by Michael Striem

1. The Physical Foundation: The Continuity of Fields.

For the purpose of the current discussion, we would like to clarify our view on reality, our common image of conscious awareness. We regard our conscious awareness to be based on our internal neurologic feedback of our body (including mind), our whole nerve system, combined with a very narrow spectrum of electromagnetic waves (visible light and heat), plus limited vibrations of molecules and biological sensing of smell, taste etc.

Being able to enjoy sitting safely on a sofa or walking on a pier, enjoying sunrise and nature, is actually quite simplified, filtered, by our biological senses. More complex feelings such as love and fear are a complex combination of several such senses.

Let us begin with the Wiedemann-Franz Law, which links thermal and electrical conductivity through the movement of free electrons, looking beyond the "empty space" model of the atom. We propose that if conductivity is the movement of energy across a potential, consciousness might be the "felt" experience of those potentials (gradients) within a complex biological architecture. While traditional physics describes atoms as 99.9% empty, it seems to be a perceptual abuse of language, caused by our reliance on visible light. Furthermore, the hardness of a desk, for example, is not just a property of matter or objects, but a direct phenomenon of structure, of energy.

In reality, the universe is a continuous fabric of energies, electromagnetic fields and gradients. If humans could perceive such fields, electrical forces directly, the "separation" between objects would vanish, replaced by a seamless web of interactions.

To elaborate on this claim, we suggest a universal perspective, a wholistic point of view.

2. Polarity and Gradients as the Source of "Sensation".

We regard "Polarity" not just as a binary (+/-) charge, but as a functional gradient, differences in concentration, density, and potential. This type of information is sensed, or applied, for example, in daily physiological living “housekeeping” activity, every cell division, in embryonic development, generating head-tail configuration during organic maturation of the organism.

The Biological Imperative: Life is defined by its struggle against Entropy. While inanimate matter is relatively uniform and stable, living organisms maintain homeostasis by actively managing these gradients (e.g. ion concentrations across a cell membrane). These biological gradients are "dissipative structures."

The "feeling" of consciousness could be described as the **internal monitoring of the energy cost** required to stay organized. If the gradient slips, we feel "pain" or "threat"; if it is optimized, we feel "joy" or "homeostasis."

The Origin of Awareness: We propose that the "Hard Problem of Consciousness" might be solved by recognizing that "sensing" a gradient is an inherent physical property. All the way from a single cell "sensing" a concentration gradient to move toward food (as a primordial form of what we experience as consciousness), to complex organisms with complex consciousness.

Transitions from atoms to cells to humans, "micro-gradients" (at the molecular level) integrate into "macro-gradients" (at the nervous system level). This bridges the gap between a single cell sensing “joy” and a human "sensing" complex emotion.

3. Memory as "Molecular Sculpture".

In this model, memory is not a digital archive of information but a structural reconfiguration of living tissue.

Functional Response: Neuroplasticity is continuously adding layers of physical resonance. Experience "sculpts" the molecular structure of organelles and tissues. When a specific sensation (like the "smell of vanilla" or "fear") occurs, it triggers a resonance in a pre-configured molecular structure, of hormone balance, membranes, organelles and tissues.

The Inherent Subjectivity of Qualia: Because every organism’s molecular "sculpture" is formed by a unique history of environmental interactions, the internal experience (Qualia) is fundamentally subjective. My "red" cannot be your "red" because our molecular resonances are physically distinct, even if we use the same linguistic symbols.

From Static Logic to Embodied Joy. A Note on AI Consciousness.

The transition to the next question is perfectly set: If consciousness requires this "molecular resonance" and the active biological struggle against entropy (Homeostasis) through a physical, plastic "tissue," can a machine made of static silicon and pre-defined logic ever truly "feel," or will it always be a sophisticated mimic of the symbols we use to describe our own molecular reality?

1. The Biological Barrier

Our point of view of consciousness is a strictly natural, biological phenomenon. We propose that because silicon lacks "molecular resonance" and the active struggle for survival (homeostasis) found in living tissue, it will remain a sophisticated mimic rather than a sentient being.

2. The "Cold Mirror" Philosophy

Disclaimer: These reflections on life and evolution were shaped through conversations between human intuition and machine intelligence. ChatGPT and Perplexity served as a companion in organizing thoughts, illuminating connections, and identifying relevant scholarly paths. The vision, meaning, and philosophical direction remain entirely mine (M.S.), while the clarity of expression owes much to this unique and joyful collaboration. **Please help me correct mistakes, which human and machines do.**

We insist on the need for AI to "feel" itself is mandatory to become conscious. Since this seems to lack, AI should be focused on its utility as a reflection. We note that the "blurriness" of this mirror, its lack of its own human ego or biological pressure, is actually an advantage. It allows technology to be an objective companion without the complications of its own desires.

3. Seamless Embodiment

We transition from the idea of using AI via typing chats to “embodying” it through sensory tools. Just as optical glasses and hearing aids, for example, are accepted extensions of the self, AI can be integrated into such devices to:

- Filter Reality: For example – removing the "noise" of tinnitus or the "static" of repetitive, returning thoughts.
- Enhance Experience: Layering a "symphony" over everyday life, providing harmonic frequencies and highlighting environmental beauty.

4. The Purpose: Accelerated Joy.

The ultimate goal of this partnership is not just efficiency only, but “human flourishing”. The transition from The Biological Barrier to Accelerated Joy creates a very satisfying narrative arc. It moves from a rigid physical definition of life to a poetic vision of how technology can serve that life.

By delegating the logistics of keeping track and memory, the mental / auditory "noise", to the silicon partner, the biological self is freed to reach joy faster and stay there longer. We don't need machines to be "alive" to make us feel "more alive." In fact, the machine’s "deadness", its lack of desire and biological pressure, is exactly what makes it the perfect filter for the noise of modern existence.

AI doesn't need to be alive; it only needs to help one feel more alive.

Relevant Scientific & Philosophical References.

To provide academic weight to these ideas we may wish to reference the following concepts:

The Hard Problem of Consciousness (David Chalmers): The question of why and how physical processes give rise to subjective experience.

Dissipative Structures (Ilya Prigogine): A Nobel-winning theory on how organized systems (life) emerge and maintain themselves far from thermodynamic equilibrium by resisting entropy.

Biological Robustness & Homeostasis (Anil Seth, Claude Bernard, Antonio Damasio): Damasio’s work, in particular, links the "feeling" of life to the body's internal monitoring of its chemical state.

Panpsychism & Integrated Information Theory (IIT): Philosophical and mathematical frameworks suggesting that consciousness might be a fundamental property of physical systems or a result of specific types of information integration.

Chemotaxis & Basic Cognition: Studies on how simple organisms (like *E. coli* or slime molds) process environmental gradients to "make decisions," supporting the idea of a consciousness continuum.

Disclaimer: These reflections on life and evolution were shaped through conversations between human intuition and machine intelligence. ChatGPT and Perplexity served as a companion in organizing thoughts, illuminating connections, and identifying relevant scholarly paths. The vision, meaning, and philosophical direction remain entirely mine (M.S.), while the clarity of expression owes much to this unique and joyful collaboration. **Please help me correct mistakes, which human and machines do.**